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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/557,830	11/22/2005	Christopher John Pavey	046812/303649	6084

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EXAMINER	
GATES, ERIC ANDREW	

ART UNIT	PAPER NUMBER
3726	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/557,830	PAVEY ET AL.	
	Examiner	Art Unit	
	Eric A. Gates	3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *83-89,91-98,100,102 and 103* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *83-89,91-98,100,102 and 103* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/3/08; 8/19/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to Applicant's amendment filed 30 May 2008.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 83-85 and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toyota Motor Corp. (JP 2000 071115 A) in view of Caterpillar Tractor Co. (GB-A-1 216 694) and Wright Jr. et al. (U.S. Patent 5,716,057).

4. Regarding claim 83, Toyota Motor Corp. discloses a rotary tool holder assembly for high speed rotation comprising a collet 2 and a shaft 3, the collet being moveable relative to the shaft between a tool gripping position, in which an inserted tool 1 can be gripped for rotation, and a tool release position, the shaft comprising a bore 3a for receiving the collet, the shaft bore defining an inner surface 3a and the collet defining an outer surface 2a, the shaft and collet shaped such that when the rotary tool holder assembly is rotated at a high speed the inner surface of the shaft bore substantially fits the outer surface of the collet (as seen in figure 2), wherein the outer surface of the collet and the inner surface of the shaft bore are tapered with respective taper angles, the collet and the shaft bore tapering radially inwardly away from a tool receiving mouth

of the collet, and the shaft is arranged such that when the rotary tool holder assembly is rotated at a high speed there is relative deformation between the outer surface of the collet and the inner surface of the shaft bore to give a substantial fit therebetween (as described in paragraph 11 of the JPO translation of the detailed description provided in the IDS filed 22 November 2005, and as seen in figures 1 and 2).

Toyota Motor Corp. does not disclose the collet and the shaft bore tapering radially inwardly away from a tool receiving mouth of the collet such that when the rotary tool holder is stationary, the taper angle of the collet is greater than the taper angle of the shaft bore and at least one of the shaft. Caterpillar Tractor Co. teaches that it is standard industrial practice to provide a collet 28 with a taper angle 29 that is greater than the bore taper angle 27 of a shaft 26 for the purpose of preventing the collet from sticking in the shaft bore (page 2, lines 13-21 and 71-82). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the collet and shaft of Toyota Motor Corp. with the taper angles of Caterpillar Tractor Co. in order to prevent the collet from becoming stuck in the bore of the shaft.

Toyota Motor Corp. does not disclose wherein a friction reducing coating is provided between at least a portion of the inner surface of the shaft bore and the outer surface of the collet. Wright Jr. et al. teaches the use of a collet 44 having an outer taper and a collet holder 46 with a body 47 having an inner taper 48, with either the outer surface of the collet or inner surface of the body, or both, coated with a solid film lubricant for the purpose of improving the wear between them (see column 2, lines 14-21, and column 3, lines 12-16). Therefore it would have been obvious to one having

ordinary skill in the art at the time of the invention to have modified the collet and shaft of Toyota Motor Corp. with the friction reducing coating of Wright Jr. et al. in order to extend the wear life of the collet and shaft.

5. Regarding claim 84, the modified invention of Toyota Motor Corp. discloses at least part of an outer surface of the collet which faces the inner surface of the shaft bore is coated with a friction reducing coating.

6. Regarding claim 85, the modified invention of Toyota Motor Corp. discloses the collet 2 comprises a plurality of jaw portions (it is inherent that the collet comprises slits to form jaw portions to allow for the opening and closing of the collet to grasp and release the tool) for gripping an inserted tool and the collet defines a main axis, at least one of the collet and the shaft are tapered so that axial movement of the collet relative to the shaft causes or allows the jaw portions of the collet to move in a direction transverse to the main axis of the collet for gripping and releasing of an inserted tool (as seen in figures 1 and 2).

7. Regarding claim 92, the modified invention of Toyota Motor Corp. discloses the coating is applied to parts using a low temperature process (see column 4, lines 52-54 of Wright Jr. et al.) to avoid changing the properties of the materials of the coated components.

8. Claims 86-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toyota Motor Corp. (JP 2000 071115 A) in view of Caterpillar Tractor Co. (GB-A-1 216

694) and Wright Jr. et al. (U.S. Patent 5,716,057), and further in view of Pruvot et al. (US 4,791,841).

9. Regarding claims 86-88, the modified invention of Toyota Motor Corp. discloses the invention substantially as claimed, except the modified invention does not disclose the collet is carried by a bobbin arranged for axial movement within a bore of the shaft, or a spring is provided for biasing the collet towards the gripping position, or a spring arranged for acting on the bobbin to bias the collet towards the gripping position.

Pruvot et al. '841 shows in Figure 1 a rotary tool holder (1) for high speed rotation comprising a collet (12), a shaft (4,5) and a bobbin (15,16) arranged for axial movement within a bore of the shaft, wherein a spring (17), disposed in a spring receiving bore (at 18) of the shaft, acting on the bobbin is provided for the purpose of biasing the collet towards the gripping position (abstract and col. 2, lines 40-50). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the rotary tool holder of Toyota Motor Corp. to include a biased bobbin member attached to the collet as taught by Pruvot et al. '841 in order to facilitate smooth, uninterrupted axial movement of the collet, thus improving the inserted tool gripping and release operations of the rotary tool holder.

10. Claims 89, 91, 93-98, 100, 102, and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toyota Motor Corp. (JP 2000 071115 A) in view of Caterpillar Tractor Co. (GB-A-1 216 694), Wright Jr. et al. (U.S. Patent 5,716,057), and Pruvot et al. (US 4,791,841), and further in view of Srebot et al. (US 4,943,071).

11. Regarding claims 89, 91, 93-98, 100, 102, and 103, the modified invention of Toyota Motor Corp. discloses the invention substantially as claimed in the rejection of claims 83-88 and 92 above, except the modified invention does not disclose at least a portion of the spring is coated with a friction reducing coating or at least a portion of the spring receiving bore being coated with a friction reducing coating.

Srebot et al. '071 shows in Figure 3 a rotary tool holder for high speed rotation comprising a collet (26), a shaft (13) and a bobbin (22) arranged for axial movement within a bore of the shaft, wherein a spring (52) and a spring receiving bore (Fig. 3) housing the spring are coated with a friction reducing coating (from greaser 53) for the purpose of improving the wear and movement of the springs. Wright Jr. et al. teaches that it is well known within the art to replace conventional lubricants such as grease with a solid film lubricant for the purpose of preventing dirt and abrasion particles from collecting on the grease and for improving the wear characteristics of the moving parts (see column 1, lines 8-58, and column 4, lines 14-30). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the rotary tool holder of Toyota Motor Corp. with the friction reducing coating on the spring and spring receiving bore as taught by Srebot et al. '071 in order to facilitate smooth, uninterrupted axial movement of the spring within the spring receiving bore, thus improving the inserted tool gripping and release operations of the rotary tool holder, and further modified by the solid film lubricant of Wright Jr. et al. in order to keep the spring and spring bore operating cleanly and therefore extending the wear life of the spring and spring bore.

Response to Arguments

12. Applicant's arguments with respect to claims 83-89, 91-98, 100, 102, and 103 have been considered but are moot in view of the new ground(s) of rejection.

13. For the reasons as set forth above, the rejections are maintained.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric A. Gates whose telephone number is (571)272-5498. The examiner can normally be reached on Mon-Thurs 8:45 - 6:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. A. G./
Examiner, Art Unit 3726
29 August 2008

/DAVID P. BRYANT/
Supervisory Patent Examiner, Art Unit 3726